



How To Use Portfolio123

Part 12

Setting Up A Simulation

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The last part of this tutorial series provided an overview of simulation. It explained why we do it (what it adds to the tests we've already learned to conduct on our screens and ranking systems) and introduced the steps. If this material isn't fresh in your mind, I suggest you review it now before going further. The material here will be presented in the sequence implied by the Simulation interface. Bear in mind, though, that you don't have to follow it. You can go in any order you wish. You can launch the simulation any time you want from a button that says "Run Simulation" which is conspicuous in the interface for each step.

Now, let's look in detail at each of the steps in the Simulation process.

GENERAL

When you opt to create a New simulation, the interface takes you first to the section of the interface referred to as General. It's shown in Figure 1.

Figure 1

The screenshot shows the 'General' tab of the simulation interface. The title bar includes tabs for 'General', 'Position Sizing', 'Universe & Ranking', 'Buy', 'Sell', 'Stop Loss', 'Hedge Mkt Timing', 'Period & Restrictions', and 'Review'. Below the title bar, there are navigation buttons: 'Prev', 'Next', 'Review', and 'Run Simulation'. A yellow banner at the top of the main area reads 'Using settings from 'Tutorial Demo'' with a 'change ...' button. The main area contains the following parameters:

Simulation Name	Tutorial Demo
Category	Unclassified Change
Starting Capital	100000.0
Benchmark	SP500 Index
Commission each Trade	9.99 <input checked="" type="radio"/> Flat Fee <input type="radio"/> Cents/Share <input type="radio"/> % Of Total
Slippage (% of trade amount)	0.0
Rebalance Frequency	Four Weeks
Price for Transactions	Next Average of Hi and Low
Allow sold holdings to be re-bought at current rebalance	<input type="radio"/> Yes <input checked="" type="radio"/> No What's this?
Save Transactions	<input checked="" type="radio"/> Yes <input type="radio"/> No What's this?
Visible by	Private

Most of this should be familiar to you from other sections of Portfolio123. Here are some new considerations. As you can see, selections have already been made for a Tutorial Demo that will be used here for illustration purposes.

Starting Capital

This is an important new element. It's set at \$100,000 as a matter of default. Be thoughtful about this and try to use a number that's realistic in light of the amount you're actually likely to invest based on the strategy. The size of your portfolio, coupled with the number of positions you want to hold (something that will be established in the next section) will be important factors, along with rebalance frequency, in determining whether trading costs (commissions plus slippage) are likely to be burdensome to you. Assuming you have a \$9.99 flat-rate commission on a portfolio with 25 positions that gets rebalanced every four weeks, the impact of trading costs can vary much depending on whether the portfolio size is \$3,000 or \$100,000.

Commission each Trade

This is separate from any slippage you might want to assume. Notice that the simulator can accommodate three different kinds of commission structures; flat fee, cents per share or % of total. Most users should be able to input an assumption that matches the fee structure of the brokerage firm they plan to use.

Allow sold holdings to be re-bought at current rebalance

To one who is experienced in screening, this would seem an odd question that would clearly have to be answered in the negative. The only way a stock could be sold at rebalancing is if it failed one or more of the screening tests; obviously, you would not want such a stock included in your portfolio going forward.

In simulation, the answer is not so clear since, as we'll see later, the sell rules are not necessarily going to match up with the screen.

Suppose, for example, a stock gets into your portfolio by having a rank of 98 and by passing all of your Buy Rules. Assume at re-balancing, the stock still has a still-good-enough rank (96 for example), but was sold because it failed to satisfy a valuation-oriented rule that required selling of stocks with PEG ratios above 2.00. Assume, too, that there is no Buy Rule involving the PEG ratio. Unless you leave this parameter at the default "No" setting, there would be nothing to prevent the just-sold stock from coming right back into your portfolio.

For an example of a situation wherein you might wish to change the setting to "yes," recall from Part 11 that simulation allows portfolios to ride winners (thereby allowing their weightings to increase) while the screener backtest automatically presumes all weights are re-sets to equal at rebalancing. You can recreate the screening approach in Simulation with a single sell rule you can be sure will apply to every possible stock, such as $RANK \leq 100$. If you do that, and set this parameter to "Yes," your portfolio will be emptied at each rebalancing and refilled, in equal allocation, with all stocks that measure up as per your ranking system and buy rules, thereby emulating the screener backtest. (Don't assume this makes simulation redundant; there are still other important features that are absent from screener, such as commission, hedging and stop loss).

Save Transactions

This is an administrative parameter. The default setting is "yes," which means the simulation will keep detailed records of all the buy and sell transactions. Most of the time, this setting will be fine. But if your simulation is extensive (i.e. very frequent rebalancings) the storing will slow the processing time. If this becomes an issue, and you can live without seeing the transaction details, you can switch the parameter to "no," in which case, the simulation will run much faster.

POSITION SIZING

Figure 2 shows the Position Sizing interface.

Figure 2

General Position Sizing Universe & Ranking Buy Sell Stop Loss Hedge Mkt Timing Period & Restrictions Review

Prev Next Review Run Simulation

Position Sizing

% of Portfolio Value 4 Ideal Size of a New Position as % of Total Value (from 0.2 to 100%)
Approximate number of Positions: 25.0
Constraints: 30 % From Ideal Size

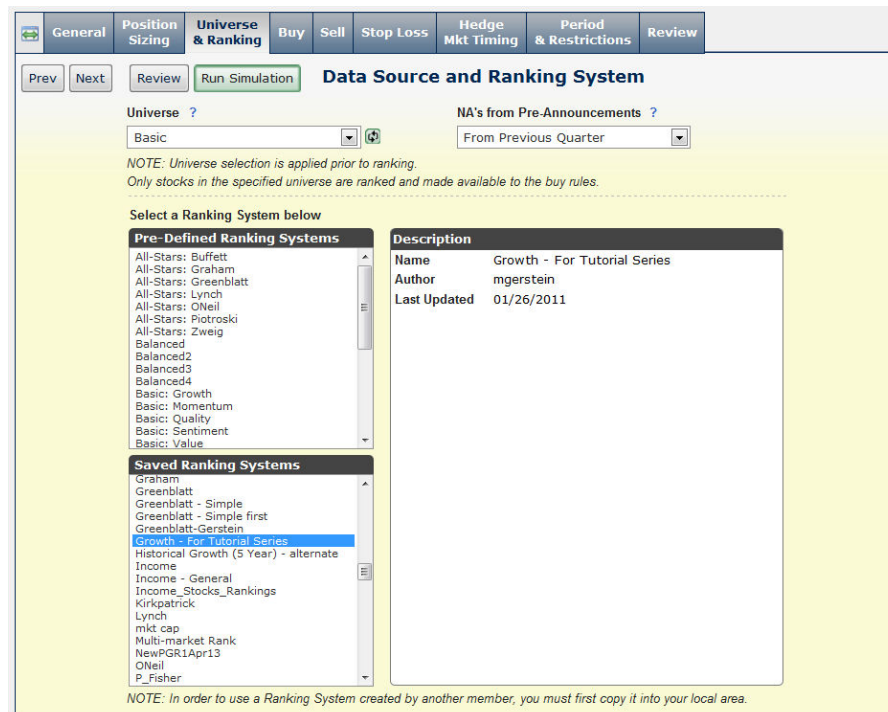
Fixed Amount \$ 5000

This is where you determine how many positions you will hold. You can do this by inputting a target ideal percentage for each position or a fixed dollar amount. Figure 2 shows how you would aim for a 25-stock portfolio; you'd accomplish that by telling the simulator the ideal per-position stake is 4%.

UNIVERSE & RANKING

This is the heart of the simulation. This is the place where you identify the universe from which you'll draw and the ranking system you'll use.

Figure 3



General Position Sizing **Universe & Ranking** Buy Sell Stop Loss Hedge Mkt Timing Period & Restrictions Review

Prev Next Review Run Simulation **Data Source and Ranking System**

Universe ? NA's from Pre-Announcements ?

NOTE: Universe selection is applied prior to ranking.
Only stocks in the specified universe are ranked and made available to the buy rules.

Select a Ranking System below

Pre-Defined Ranking Systems	Description
All-Stars: Buffett	Name Growth - For Tutorial Series
All-Stars: Graham	Author mgerstein
All-Stars: Greenblatt	Last Updated 01/26/2011
All-Stars: Lynch	
All-Stars: O'Neil	
All-Stars: Piotroski	
All-Stars: Zweig	
Balanced	
Balanced2	
Balanced3	
Balanced4	
Basic: Growth	
Basic: Momentum	
Basic: Quality	
Basic: Sentiment	
Basic: Value	
Saved Ranking Systems	
Graham	
Greenblatt	
Greenblatt - Simple	
Greenblatt - Simple first	
Greenblatt-Gerstein	
Growth - For Tutorial Series	
Historical Growth (5 Year) - alternate	
Income	
Income - General	
Income_Stocks_Rankings	
Kirkpatrick	
Lynch	
mkt cap	
Multi-market Rank	
NewPGR1Apr13	
O'Neil	
P_Fisher	

NOTE: In order to use a Ranking System created by another member, you must first copy it into your local area.

As you can see, this particular simulation will draw from a universe I created called Basic (it aims to establish liquidity by excluding stocks that trade OTC, have market capitalizations below \$250 million and share prices below \$5).

The ranking system used here is the simple Growth model created for demonstration purposes and introduced in Part 11. It uses the following three factors:

- **EPS%ChgPYQ** (weight = 35%)
- **EPS%ChgTTM** (weight = 15%)
- **EPS Acceleration** (weight = 50%)
 - $(\text{EPS\%ChgPYQ} - \text{EPS\%ChgTTM}) / \text{abs}(\text{EPS\%ChgTTM})$

Screening is very widely available on the web but that's not typically so with multi-factor ranking. Accordingly, many new Portfolio123 members are accustomed to thinking of screening as the main stock-selection protocol and tend to see ranking systems as a nice enhancement (i.e. to narrow the results of the screen).

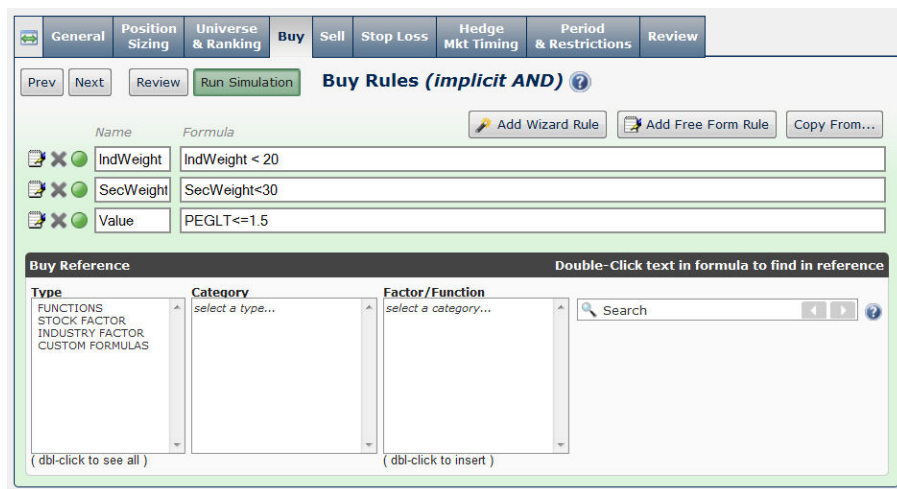
Actually, though, whether ranks enhance screening, or whether screening enhances ranking systems (i.e. as a tool for choosing from among the many stocks ranked in the top bucket) is a matter of semantics; like the argument over whether the chicken or egg came first.

The placement of rank selection within the theoretical simulation sequence is consistent with the vantage point that sees screening as a tool to enhance ranking.

BUY RULES

Figure 4, which depicts the buy-rules interface, should look very familiar. For all practical purposes, it's the same as the interface used in the screener.

Figure 4



Despite the familiarity of what we see, there are three things worth noting.

1. The first is substantive. Note the first two rules, one capping industry weight at 20% and the other capping sector weight at 30%. These rules are not available in the screener. As the simulator goes down the list of eligible stocks, from 1 to 25 in this case, if/when it confronts one that will (based on the higher ranking stocks already selected) push the industry or sector exposure over the limit, the stock will be skipped and the next highest stock from a non-excessive industry or sector will be selected in its place. As you work with either or both of these rules, assuming you choose to do so, you may notice that as you force more diversification, you're likely to depress returns. Don't be surprised. The point of diversification is risk-reduction, not return-enhancement.
2. The second item, a cosmetic feature, consists of the rule Names you see just to the left of the formulas. These are for your convenience. If you choose not to fill them in, Portfolio123 will name them Buy1, Buy2, etc.
3. The final item, also cosmetic, is the label "Implicit AND" near the top of the interface. This reminds us that we are, indeed, in a screening interface, one in which stocks must satisfy each rule in order to pass. The only exception, sort of, would be if one of your formulas contains an "or" expression, as is the case with screening.

This particular set of Buy Rules is much simpler than what we often see in many screens. In fact, assuming we don't run into a case of excess sector or industry concentration, there's only one filter, the one involving the PEG ratio.

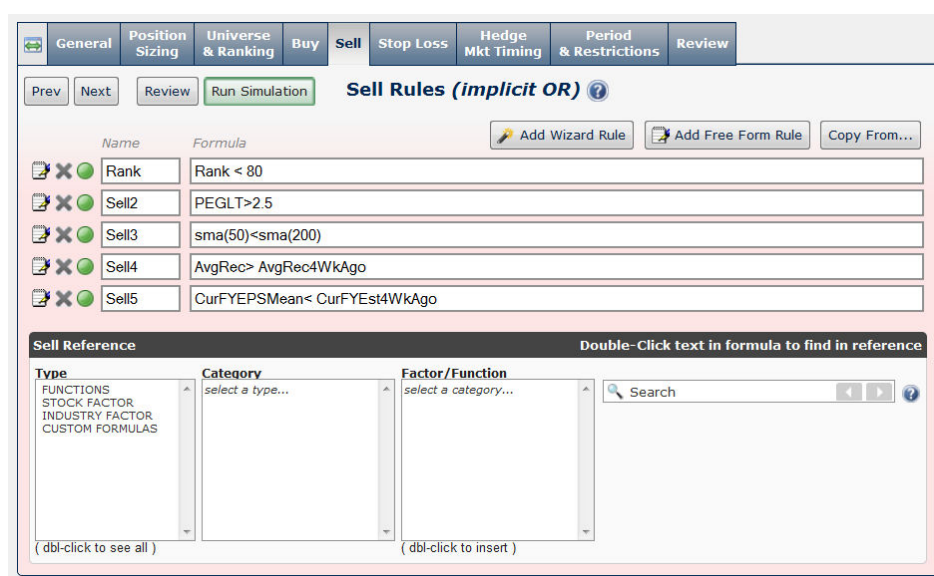
But that's just the case for this specific demonstration. Any collection of rules you create in the screener can be replicated as simulation Buy rules. In fact, if you want to use one of your screens as a set of Buy rules, you need not recreate the screen line by line. You can copy the rules directly from the screen by using the "Copy From . . ." button toward the upper right portion of the interface. (Clicking on that button will also give you an opportunity to copy a collection of buy rules you've already stored in another simulation or in a Portfolio.)

SELL RULES

Now we're getting into areas of the simulation that are radically different from what we've seen before.

At first glance, Figure 5, which depicts the Sell Rules interface, seems ordinary enough.

Figure 5



Look, however, at the label: (implicit OR). This underscores a feature that is very different from what we've seen in the screener or the Buy rules. A stock will be sold if it triggers any one of the rules.

Compare the Buy and Sell protocols:

- Since our target portfolio size is a mere 25 positions, it's likely that stocks making the grade will be ranked 95 or higher. Notice, though, that a change in rank won't trigger a sale until we get down below 80. So once we buy a stock, we're willing to cut it some slack in terms of how much fundamental softening we'll tolerate before we decide to sell.
- The Buy rules included one that required the PEG ratio (specifically PEGLT, which is computed with reference to the consensus estimate of the long-term EPS growth rate) to be no higher than 1.5. When we screen, we expect a stock to be dropped if, at a rebalancing occasion, its PEG winds up above 1.5. This simulation doesn't work that way. Given that we're dealing with a growth orientation, I'm willing to give a stock a chance to run a bit before dropping it, to allow it to even reach what many would consider a state of overvaluation.
- The other three sell rules resemble nothing that was considered in the buying phase. In addition to a big decline in the rank or escalation in the PEG ratio, we would also drop a stock if its 50-day simple moving average dropped below its 200-day average, if the overall consensus analyst

recommendation score increased in the past four weeks (since these scores run on a 1 to 5, bull to bear scale, an increase implies at least somebody downgraded the stock), or if the consensus EPS estimate dropped in the past four weeks. Remember, the ranking system we used was based on historic data. The last three sell rules, one way or another, try to ferret out situations where the Street may be turning pessimistic about future prospects.

STOP LOSS

Figure 6 illustrates the simulator's stop-loss interface.

Figure 6

When stop-loss is enabled, the holdings are evaluated daily, regardless of the rebalance frequency. It looks to see if the low price for the day triggers the stop-loss. If triggered it sells the positions using a price that corresponds to your stop-loss percentage unless that price is greater than the high for the day (for ex. with gap-downs). In the latter case the price used will be the high for the day. Slippage and commissions are factored in after the price is decided.

Stop Loss Strategy

- None
Only Sell rules are used at each rebalance period
- Trailing Stop
Percent below peak value since position was opened
- Entry Based Stop
Percent below purchase price

Percent %

Resulting Funds

- Keep in cash until next rebalance

The default state of affairs, illustrated above, is for no use of stop-loss, meaning stocks can only be sold at rebalancings if they falter under one or more of your Sell rules.

You can, if you wish, modify that by providing for a sale any day based upon a stop loss, which can be Trailing (the stock falls to a specified percent below the peak it achieved since the position was opened) or Entry Based (the stock falls to a specified percent below the purchase price).

Don't always assume stop-losses enhance your results. Sometimes they backfire by pulling you out of stocks that could have recovered had you given them a chance. Whether or not this is the case depends on the type of strategy you use.

In this case, results would be enhanced by a 15% trailing stop. Compare Figures 7 and 8..

Figure 7 – No Stop Loss

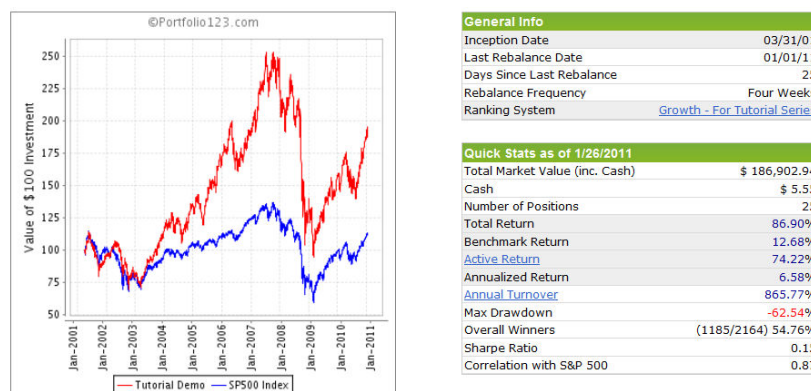
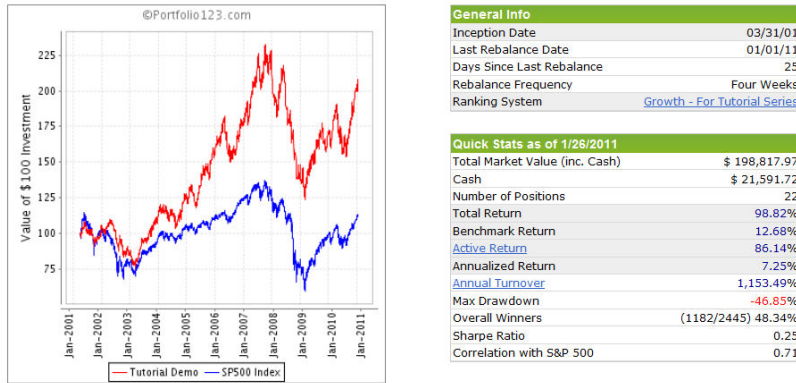


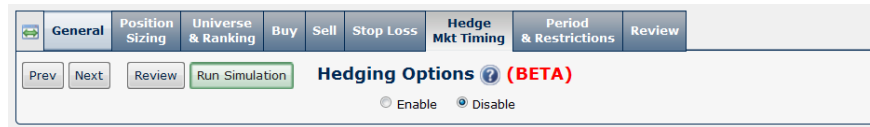
Figure 8 – 15% Trailing Stop Loss



HEDGE MKT TIMING

Figure 9 shows the default state of affairs, where the Hedging-Market Timing functionality is disabled.

Figure 9

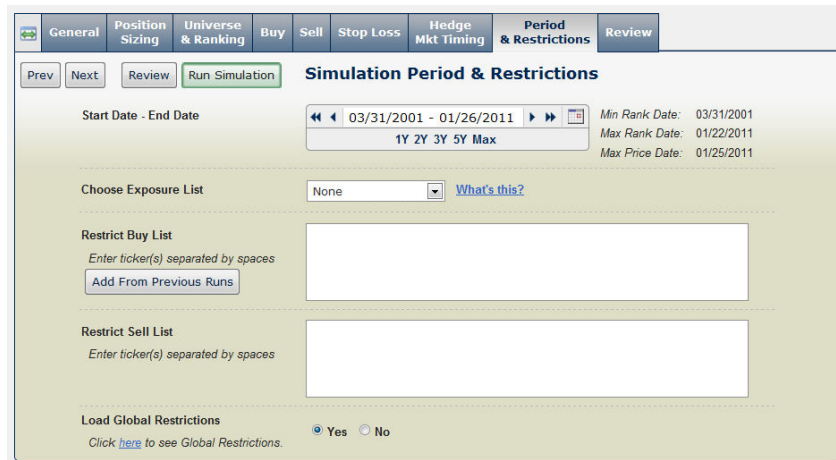


For now, I'll leave this as is. These are substantial topics that will be treated separately in the Appendix to this document.

SIMULATION PERIOD & RESTRICTIONS

The most widely used section of this interface, the Start and end Dates, should already be familiar.

Figure 10



Exposure Lists (which you can set up in My 123 >> Lists >> Exposure), consist of one or more date pairings such as: 07/01/2004 07/31/2004

These identify periods for which you want the simulation to assume 100% cash. You can use these if you have an external program (separate from the market-timing section of the Portfolio123 simulator) that generates market timing signals.

The final two sections, Restrict Buy List and Restrict Sell List, consist of tickers you don't want to buy or don't want to sell regardless of how the stocks fare under the simulation parameters. If for example, you do not want to own Exxon (XOM) under any conditions, you would include XOM on a Restrict buy list.

You can enter such tickers directly into the interface as seen in Figure 10. If you have a set of tickers you want to use for Restrict Buy or Restrict Sell lists, not just for this specific simulation but for all your Portfolio123 models, you can go to My 123 >> Lists >> Restriction and enter them there. If you do that, you can reference them in individual simulations by having the "Yes" radio button checked in the "Load Global Restrictions" area at the bottom of this interface.

REVIEW

The final section of the interface, depicted in Figure 11, allows you to see everything you did in one place.

Figure 11

The screenshot shows the 'Review' tab of the Portfolio123 simulator interface. At the top, there is a navigation bar with tabs for General, Position Sizing, Universe & Ranking, Buy, Sell, Stop Loss, Hedge Mkt Timing, Period & Restrictions, and Review. The 'Review' tab is active, and a 'Run Simulation' button is visible. The interface is divided into several sections:

- General:** Name: Tutorial Demo; Starting Capital: 100000.0; Benchmark: SP500 Index; Commission: 9.99 (Flat Fee); Slippage: 0.0% of Total Amount; Rebalance Frequency: Four Weeks; Price for Transactions: Next Average of Hi and Low; Allow sold holdings to be re-bought at current rebalance: No; Save Transactions: Yes; Visibility: Private; Category: Unclassified.
- Position Sizing:** Type: '% of Market Value'; Ideal Weight New Pos: 4; Aprox. Number of Positions: 25.0; Max Weight Deviation: 30.
- Universe & Ranking System:** Universe: Basic; NA's from Pre-Announcement: From previous Quarter; Ranking System: Growth - For Tutorial Series.
- Buy Rules (Implicit AND):** IndWeight: IndWeight < 20; SecWeight: SecWeight < 30; Value: PEGLT <= 1.5.
- Sell Rules (Implicit OR):** Rank: Rank < 80; Sell2: PEGLT > 2.5; Sell3: sma(50) < sma(200); Sell4: AvgRec > AvgRec4WkAgo; Sell5: CurFYEPSMean < CurFYEst4WkAgo.
- Stop Loss:** Strategy: None.
- Hedge / Market Timing:** DISABLED.
- Period & Restrictions:** Start Date: 03/31/2001; End Date: 01/26/2011; Exposure List: None; Restrict Buy List; Restrict Sell List; Load Global Restrictions: Yes.

If you want to change any area, you can get to it by clicking on the appropriate tab at the top of the Review interface, or you can click on the section title, each of which appears in blue and serves as a link to that particular section.

APPENDIX – MARKET TIMING AND HEDGING

Portfolio123 users don't have to jump ship or passively suffer when the stock market goes sour. The "Hedge / Market Timing" section of the simulator affords you an opportunity to act proactively to moderate losses, or even make money, when times turn bad. This is the sixth step in the Simulation process. It comes just after the Sell rules and just before you finish up with "Period & Restrictions."

As we've seen, this functionality, is inactive, or rather, disabled by default. If you leave it like this, your simulations will proceed normally, assuming you want full exposure to equities or ETFs (those that pass muster under your simulation parameters) at all times.

Here's what you'll see if you click to "Enable" hedging.

Figure A-1

The screenshot shows the 'Hedging Options' interface. At the top, there is a navigation bar with tabs: General, Position Sizing, Universe & Ranking, Buy, Sell, Stop Loss, Hedge Mkt Timing (selected), Period & Restrictions, and Review. Below the navigation bar, there are buttons for 'Prev', 'Next', 'Review', and 'Run Simulation'. The main title is 'Hedging Options (BETA)'. There are radio buttons for 'Enable' (selected) and 'Disable'. Below that, there is a 'Hedge' dropdown menu set to 'GO TO CASH'. The 'Rebalance Frequency' is set to 'Four Weeks'. There are sections for 'Entry Rules' and 'Exit Rules', each with 'Add Wizard Rule' and 'Add Free Form Rule' buttons. At the bottom, there is a 'Rule Reference' section with three columns: 'Type' (FUNCTIONS), 'Category' (select a type...), and 'Factor/Function' (select a category...). A search bar is also present in the Rule Reference section.

The sections of the interface are:

- **Hedge**

In this area, you decide how to implement your hedge; what you want to do with your portfolio when your timing rules determine that market conditions are bearish. The default choice is to go 100% into cash. Below, when we look more closely at this area, we'll see the other choices you have.

- **Rebalance Frequency**

This tells the simulator how frequently to run the timing rules and make portfolio adjustments, if necessary. At present, this must match the rebalancing choice you made for the simulation as a whole.

- **Entry Rules**

This is where you specify one or more screening rules that identify bear-market conditions. These rules tell the simulator when you wish to enter into a hedge.

- **Exit Rules**

This is where you specify one or more screening rules that identify normal-market conditions. These rules tell the simulator when you wish to exit any hedge that may be in place.

- **Rule Reference**

This is the standard Rule Reference you see throughout Portfolio123. As in other places, it's there to help you create Free-Form rules should you choose to use that approach (you may, if you wish, stick to per-defined rules that can be accessed through the Wizard).

Note, though, that there's one important thing unique to technical analysis rules when used in the hedging interface. All such functions operate, by default, on whatever has been selected as a benchmark. That means you can use all technical-analysis functions in your hedging rules; you are not limited to just those that accept the Series parameter.

Let's now use an example to look more closely at the key sections.

A Sample Simulation With Hedging Enabled

I created a very simple simulation you can use to get acquainted with market timing and hedging. It's called, appropriately, "Sample To Test Hedging" and it is visible to the Portfolio123 community.

Key aspects of the simulation are:

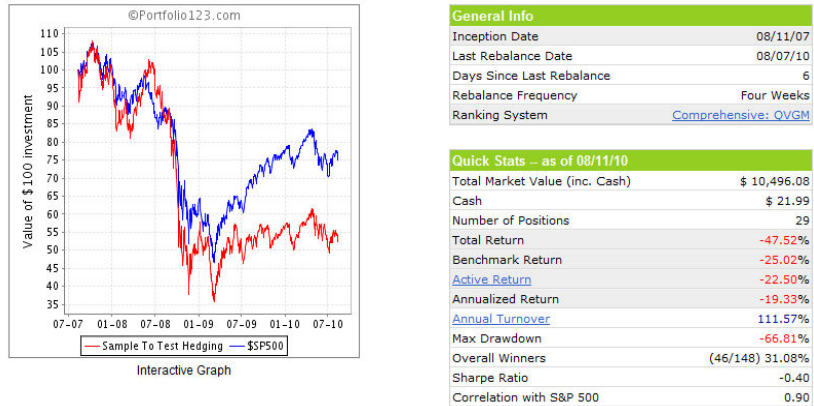
- Starting Capital: \$20,000
- Commission: flat rate of \$8.95 per trade
- Slippage: 0.25%
- Rebalance Frequency: Four Weeks
- Targeted Number of Positions: 30

You probably notice that this is not an appealing combination of capital, number of positions, and commission. It has been deliberately made so to help you gauge how the additional trading occasioned by hedging may impact your overall results and encourage you to design protocols that make sense in light of the specifics of your own account.

- Universe: The per-defined Prussell 3000 universe
- Ranking System: The pre-defined Comprehensive: QVGM model
- Buy Rule: SecWeight < 30
- Sell Rule: Rank < 90
- Period: 8/11/07 – 8/11/10

Figure A-2 shows a summary of the performance of this simulation. Admittedly, it's pretty poor, having been hammered in the 2008 crash and unable to enjoy the extent of the 2009 recovery. That's OK. The goal, here, is not to demonstrate general portfolio strategy but to illustrate hedging under difficult transaction-cost assumptions. Figure A-2 is a baseline that can help us gauge the effectiveness of our hedging.

Figure A-2



Let's start hedging!

Timing Rules: Entry and Exit

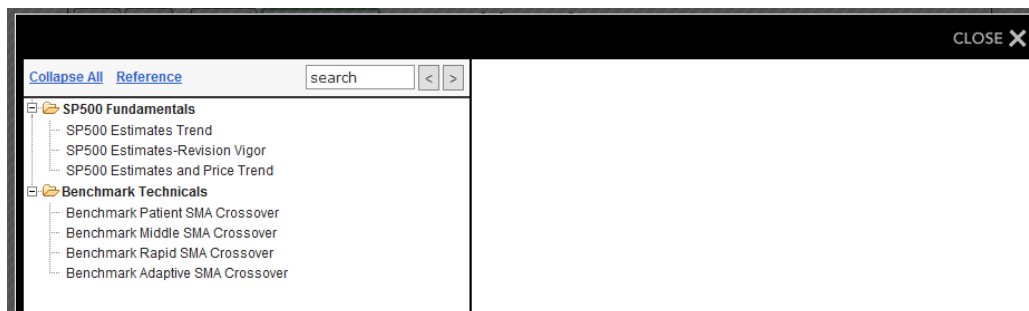
Figure A-3 shows what we see after clicking on the "Add Wizard Rule" button.

Figure A-3



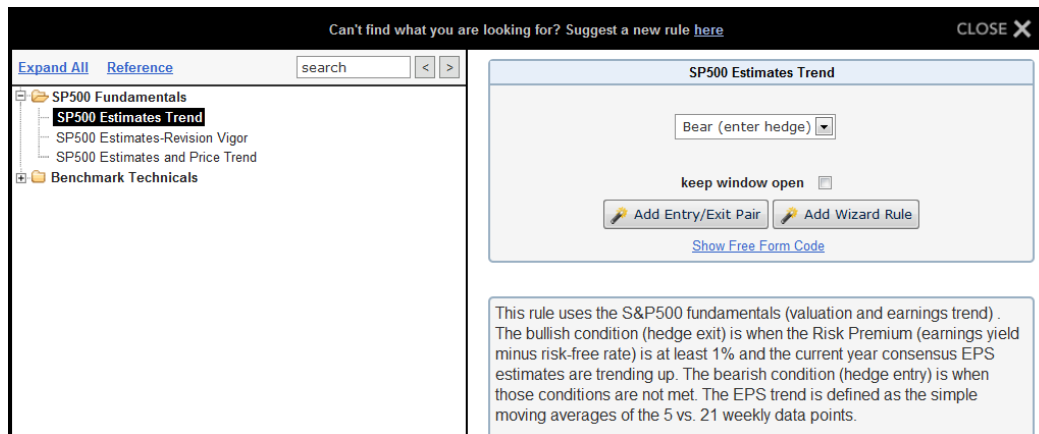
Here's what we see when we expand all the folders. Notice it differs from the screener wizard.

Figure A-4



Here is the SP500 Estimates Trend rule.

Figure A-5



Look at the description. It may seem familiar to some. It's the standard Portfolio123 timing model. It's bullish if the consensus estimate of S&P 500 companies is trending upward (5-week moving average above 21-week moving average) and if the S&P 500 risk premium is at least 1%. In free form, it looks like this:

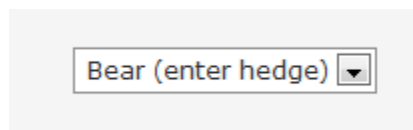
$$\text{close}(0, \#s\text{prp}) < 1 \text{ or } \text{sma}(5, 0, \#s\text{pepscyc}) \leq \text{sma}(21, 0, \#s\text{pepscyc})$$

Notice, though, some interesting subtleties.

Usually when we discuss market timing on Portfolio123, we often talk mainly from the perspective of the bullishness, or at least, normalcy. We say we're in stocks if Actually, though, hedging is an active step we initiate when we're bearish. So our first thought is an entry rule. Look again at the above free form. It articulates the bearish condition; the risk premium being below 1% or the 5-week estimate moving average not being above the 21-week moving average. We'd see the bullish version of the rule when we look at Exit conditions.

Also, notice the drop-down menu. We're specifically told, in all circumstances, if the rule we're about to select is an entry or exit condition.

Figure A-6



This is important. The wizard is the same for entry or exit. So before adding a rule, check the drop-down to make sure the appropriate version, Bear (enter hedge) or Bull (exit hedge), is showing and switch to the appropriate choice if necessary.

Notice, too, the button that says "Add Entry / Exit Pair." If you click that, you don't have to worry about which choice from the drop-down menu you use. Clicking that button will automatically put the bullish and bearish versions of the rule in the appropriate place.

And as with the screener wizard, you can always click on “Show Free Form Code” to toggle to a view that shows the details (and, of course, back to the Wizard view).

Figure A-7

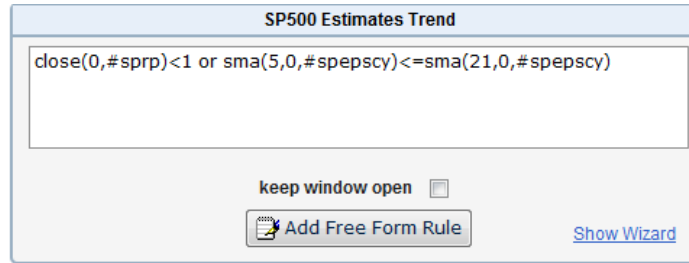
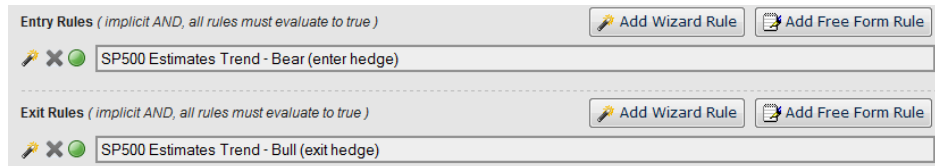


Figure A-8 shows what the interface looks like after I use the wizard to establish entry and exit rules based on this protocol.

Figure A-8



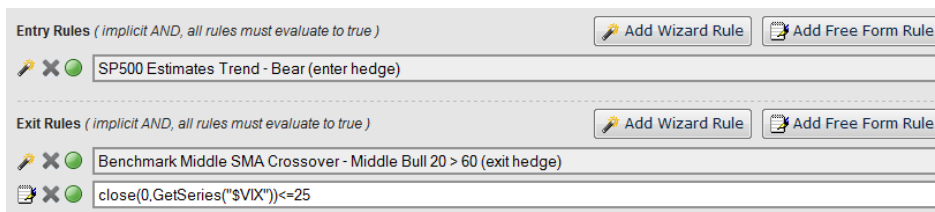
As suggested above, the pre-defined timing rules were conceived as matched pairs, an entry rule (bearish conditions) and a corresponding exit rule (bullish conditions). But you don't have to follow the match. You could, for example, use one rule for entry and another for exit.

Figure A-9



You could also have more than rule for entry and/or exit and mix and match wizard and free form at will.

Figure A-10



For the rest of this tutorial, the standard Portfolio123 timing model will be used (Figure A-8).

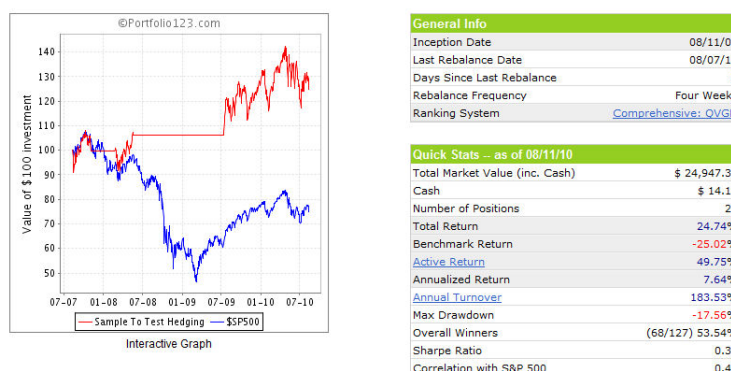
The Hedge

Let's start with the simplest hedge, the one that goes 100% cash when conditions are bearish.

Figure A-11



Figure A-12



That was a simple hedge, but it served us well.

This is also a very useful way to test your timing rules. Keep the all-cash assumption until you are satisfied in this regard. After your timing rules are set, then you can move on. When you do, there are three issues you will need to address:

1. The hedge vehicle
2. The type of trade
3. The percent allocation

The Hedge Vehicle

Click on the Hedge drop-down.

Now, you see four groups of additional hedge vehicles from which you can choose.

- Fixed Income ETFs

Three are offered; a short-term fund, an intermediate-term fund, and a long-term fund.

- Long (equity) ETFs

We offer standard, double leveraged, and triple leveraged ETFs based on the S&P 500 and the Russell 2000. We also include the ETF pegged to gold.

- Short (equity) ETFs

We offer standard, double leveraged, and triple leveraged short ETFs based on the S&P 500 and the Russell 2000.

- Indies

Here, you'll find a variety of market induces. Obviously, you can't use these directly, but if, based on your testing, you decide you'd like to work with one of them, you can substitute an ETF that specifically tracks the index of your choice or approximates it.

It seems likely that the leveraged and short ETFs will be popular choices as hedge vehicles. But you may notice a problem in this regard. They were first introduced in mid-2006 and many came out later than that. Does that mean your ability to backtest is limited? (Even the fixed-income ETFs debuted in 2002, suggesting they, too, would have some backtest limitation.)

Actually, you can test everything all the way back to 3/31/01!

The beauty of these ETFs is that they seek to passively track recognized indexes. Consider the short S&P 500 ETF (ticker: SH). It's designed to deliver the inverse of the daily performance of the S&P 500. Regardless of when SH was launched, we know what the S&P 500 did every day from 3/31/01 (and, of course, much further back than that). And we can easily multiply each day's performance by -1 to get a presumed inverse.

This isn't perfect. All ETFs have tracking error (even the venerable SPY). But the tracking error on SH can be seen to be very, very modest, almost zero. We cannot assume that our effort to multiply historical daily S&P 500 percent moves by -1 will perfectly match what SH would have done had it existed from 3/31/01, but we believe the outcome is quite close; close enough to make for valid testing.

We multiplied the historic daily S&P 500 percent changes by -2 to imply price changes for the double short ETF, by -3 to imply prices for the triple short ETF, by +2 to imply prices for the double long ETF and +3 to imply prices for the triple long ETF. We made the same sorts of calculations to imply old prices for short, leveraged short and leveraged long ETFs based on the Russell 2000.

We performed similar calculations for the fixed income ETFs (based on highly-correlated Vanguard open-end funds with longer price histories) and even for GLD, the gold ETF (here, we estimated per-issuance pro forms historical pricing based on a regression model and the spot price of gold).

So the hedging tests should not be considered an effort to re-create an actual past. Instead, consider them as exactly what they are labeled as being, simulations (under laboratory-like conditions we created).

The Type Of Trade

Let's assume the hedge vehicle we select is the S&P 500 short ETF (SH).

Figure A-13

Hedge	ProShares Short S&P500 (ETF) - SH	<input checked="" type="radio"/> Long <input type="radio"/> Short
% of Total (equity + cash)	50	<input type="checkbox"/> Use Margin (if unchecked a proportionate amount of current positions will be sold so that margin is not used)

Notice that as soon as we select a vehicle other than cash, some other aspects of the interface become visible.

Next to the vehicle itself, we're asked if we want to make long purchases (the default) or sell short. Since, in this example, we're dealing with a short ETF, we'll make a long purchase (indeed, one important rationale for short ETFs is to enable investors to play the bear side of the market even through an account that is not able to sell short, such as is often the case with IRAs).

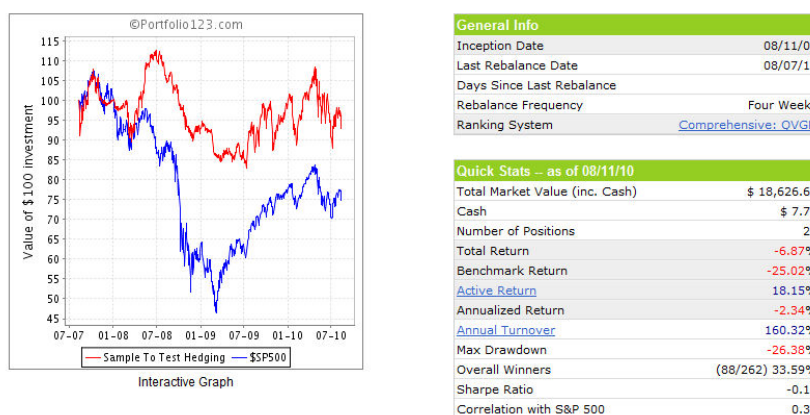
Below that, we see some choices regarding asset allocation. As illustrated above, the interface assumes we want a 50% hedge.

What that means depends on the type of transaction you want. If I check the margin box, I'd keep all stocks in my portfolio, and then use margin to buy SH up to the point where it totals 50% plus cash and equity.

I'm going to leave the margin box unchecked. That means that whenever I hedge, I'll sell a portion of my portfolio (the same percentage portion of each stock in the portfolio) and use those proceeds to buy SH.

The results are shown in Figure A-14.

Figure A-14



That's OK. It's not quite as good as the all-cash approach, but it is dramatically better than not hedging at all.

Commissions are important when you hedge by selling part of your portfolio. Most of the difference between Figure 16 and the all-cash version is attributable to commissions. Assuming this is a problem for

you and you do not wish or are unable to change the amount of capital, the number of positions you want to hold or the firm at which you trade, there are still some things you can do to moderate transaction costs.

1. Get as much bang for the buck as possible with each hedge-related trade.

Since most firms charge flat rates, you don't get much benefit from hedge trades if you spend commission money to sell just 10% of your positions, even if you buy a leveraged short ETF. You're likely to get more bang for your buck by using a high hedge percent, maybe 70% or so, and using a less-volatile short vehicle like SDS (where you won't be penalized so heavily for small timing errors).

2. Consider raising cash for the hedge by selling all or bigger portions of just a few positions.

If you have so many positions that trading costs are impinging on your ability to hedge effectively, chances are the performance of your overall portfolio won't be impacted much if you reduce the number of stocks just slightly. In other words, for this example, there's a good chance the three lowest ranked stocks (out of 30) have performance characteristics similar to the portfolio as a whole.

For example, when I reduced this test simulation to just 25 positions, the non-hedged performance was almost identical to that of the full 30-stock version. So even if I really do want to stick with 30 stocks under normal conditions, it seems likely that when hedging, I can raise cash by selling 100% of the lowest ranked stock, 100% of the second lowest ranked stock, and so on until I raise as much cash as I need for my hedge. That will definitely reduce the number of commission-able trades.

3. Consider switching to a short or margin strategy, where you don't have to sell from your existing positions

Suppose you like the idea of a 10% position in SH but can't really execute the strategy because trading costs will sink it. In that case, if your account so allows, try a 10% short position in the mirror image ETF, in this case SPY.

The Percent Allocation

Except when you hedge with cash (which must be a 100% hedge), you can choose to set the hedge amount and 10%, 20%, 30% and so on up to 100%.

Experiment thoroughly with the ways you can mix-and-match leveraged versus non-leveraged ETFs and different hedge percentages. Many think the benefit of leveraged ETFs is to increase volatility (and give you more reward for times when you are right in your timing). Actually, heavy exposure to leveraged ETFs can be dangerous because of the way these vehicles punish you for timing errors. The real benefit of leverage is to allow you to establish a respectable hedge with a low percent allocation (something you can only do if your commission arrangement so allows) and without using margin, something that cannot be done in some accounts.

Experiment, Experiment, Experiment!

Market timing and hedging are very new in the context of platforms such as Portfolio123. That's especially so when we add in the pro forma ETF price data that allows us to test all hedge vehicles back to 3/31/01, whenever or not the actual ETFs had yet come into real-life existence.

We're all going to learn a lot as we go along. Accordingly, we encourage you to experiment, experiment, experiment, and then experiment some more.

Needless to say, we'd love to hear how you're doing and hope you'll share your thoughts and experiences with the Portfolio123 community.